NATIONAL INSTITUTES OF HEALTH
WARREN GRANT MAGNUSON CLINICAL CENTER
NURSING and PATIENT CARE SERVICES

PROCEDURE: ACCESSING AN OMMAYA RESERVOIR

Approved:

Clare Hastings, RN, Ph.D.
Chief, Nursing and Patient Care Services

Formulated: 5/91
Implemented: 5/91
Revised: 11/96, 02/01; 3/2004

PROCEDURE: ACCESSING AN OMMAYA RESERVOIR

A. **Essential Information**
1. All agents administered via the intraventricular route are reconstituted by the Pharmacy Department and delivered to the PCU in a vial labeled, "Empty Sterile Vial" in addition to the usual drug product label.
2. Skin prep products containing alcohol are not used.
3. All medications administered intraventricularly require two independent checks in accordance with the SOP: Medication Administration.
4. Procedures related to an ommaya reservoir are performed by a registered nurse (RN) who has successfully demonstrated competency in this procedure.

B. **Equipment List**
1. **Hair Removal over Ommaya Reservoir**
   a. Sterile gloves
   b. Sterile blue basin
   c. Sterile barrier
   d. Five 4x4 sterile gauze sponges
   e. Chlorhexidine gluconate (ex., Hibiclens®)
   f. Sterile razor
   g. Sterile water
2. **Accessing the Reservoir**
   a. Lumbar puncture tray (pediatric or adult)
   b. 4x4 gauze
   c. 2 pairs sterile gloves
   d. Povidone-Iodine Prep Solution
   e. Chlorhexidine gluconate (ex., Hibiclens®)
   f. 5 or 10 mL syringe
   g. 25 gauge butterfly needle
   h. Four 2x2 sterile gauze
   i. Mask
   j. Spot Band-Aid
3. **Additional equipment for administration of intraventricular medication**
   a. Chemotherapy Gown
   b. Two pairs sterile chemotherapy gloves
   c. Safety glasses **(optional)**
   d. **Stopcock (optional)**
   e. 5 or 10 mL syringe per drug to be administered
   f. Chemotherapy dispensing pin with 0.2 micron filter
   g. Alcohol prep pad
   h. Medication at room temperature

C. **Steps and Key Points**

STEPS	KEY POINTS
SCALP PREPARATION	
1. Validate consent for procedure.	1.
2. Position Patient. Expose reservoir by moving hair away from Ommaya reservoir using dampened 4x4 gauze.	2. Minimize area to be clipped
3. Prepare work area. Pour small amount of Hibiclens® on 3 of the 4x4 gauze (the fourth will be used for drying).	3.

4. Don sterile gloves.	4.
5. Dip Hibiclens®-soaked gauze into sterile water and scrub scalp area over reservoir.	5.
6. Carefully shave scalp over reservoir.	6. Shave the smallest area necessary to provide exposure to Ommaya reservoir.
7. Wipe off area with dry gauze.	7.
8. Remove gloves and discard used equipment.	8.

STEPS	KEY POINTS
ACCESSING THE RESERVOIR	
1. If administering medication, verify medication is in a preservative-free solution and was placed into an "Empty Sterile Vial." Confirm medical order against pharmacy drug product label with a second nurse.	1. In accordance with the SOP: Medication Administration, two independent checks are performed.
2. Position patient and expose reservoir by moving hair away from Ommaya reservoir using a wet 4x4 gauze sponge.	2. If measuring CSF pressure, assist patient to lie flat. If administering medication and/or withdrawing CSF, may position patient with HOB elevated or flat.
3. Pump reservoir 8 times, each time allowing reservoir to refill.	3. The reservoir is pumped by gently rolling an index finger over the reservoir. If pump is slow to refill or remains depressed, stop procedure and notify LIP.
4. Prepare lumbar puncture tray: a. Pour Povidone-Iodine into empty receptacle b. Pour Hibiclens® into receptacle containing 2x2 gauze sponges c. Open syringes, butterfly needle, blunt cannula, and 2x2 gauze sponges onto sterile field.	4. If obtaining CSF pressure readings, use an adult lumbar puncture tray
5. If not administering medication, skip to #8. Clean top of medication vial with alcohol swab and leave in place. Don one sterile glove.	5. If administering hazardous drugs, don approved sterile chemotherapy glove. If administering an investigational hazardous drug, double-glove using 2 pairs of sterile chemotherapy gloves. A nurse may want to use a stopcock device if withdrawing a specimen and administering drug during the same procedure.
6. Insert chemotherapy dispensing pin into vial and attach syringe.	6. Use of chemotherapy dispensing pin obviates need to instill air into a vial containing hazardous drug thus preventing aerosolization.
7. Holding inverted medication vial with clean-gloved hand, draw up medication from vial using sterile gloved hand and place on sterile field.	7.
8. Put on second sterile glove.	8. If administering an investigational hazardous drug, double-glove using 2 pairs of sterile chemotherapy gloves.
9. If obtaining CSF pressure readings, assemble manometer and stopcock.	9.
10. Cleanse area over reservoir with Hibiclens®-soaked gauze 3 times followed by Povidone-Iodine soaked sponges 3 times. Clean in a circular pattern from the center outward. Allow to dry.	10.
11. Change sterile gloves and drape patient with sterile field.	11.
12. Insert butterfly needle into reservoir at a 90° angle.	12.

STEPS	KEY POINTS
MEASUREMENT OF CSF PRESSURE	
1. Allow butterfly tubing to fill with CSF. Once filled, pinch tubing and connect manometer with stopcock.	1.
2. Position manometer at external auditory meatus.	2. Patient must be positioned supine for manometer measurement.
3. Allow manometer to fill. Once the flow has stabilized, measure ventricular pressure by reading the bottom of the meniscus.	3.
4. If specimens are needed, attach a syringe to the stopcock and collect samples.	4. Withdraw CSF at a rate not exceeding 2 mL/min.
5. Turn stopcock to "off" position. Pinch tubing and remove manometer with stopcock.	5.
6. Proceed to next appropriate procedure below.	6.

STEPS	KEY POINTS
VENTRICULAR CSF SAMPLING (ONLY)	
1. Pinch butterfly tubing and connect 5 mL or 10 mL syringe.	1.
2. Withdraw CSF at a rate not to exceed 2 mL/min to obtain ordered specimens.	2. Refer to Dept. of Laboratory Medicine for CSF volumes required for diagnostic tests.

STEPS	KEY POINTS
MEDICATION INSTILLATION (ONLY)	
1. Pinch butterfly tubing, connect 5 or 10 mL syringe to tubing. Remove the volume of CSF equal to amount of medication volume and place on sterile field.	1. Withdraw CSF at a rate not exceeding 2 mL/min.
2. Pinch butterfly tubing, connect 3 ml syringe, remove 1 mL CSF, pinch tubing again and remove syringe. Place on sterile field and cover with a 2x2 gauze.	2. CSF (1 mL) will be used as flush after medication instillation.
3. Connect medication-filled syringe and administer at a rate not to exceed 2 mL/min. Pinch tubing, remove syringe, and place on sterile field.	3.
4. Connect CSF-filled 3 mL syringe and instill at a rate not to exceed 2 mL/min.	4. Do not administer air into reservoir.

STEPS	KEY POINTS
DEACCESSING THE RESERVOIR	
1. Remove needle from reservoir, cover area with sterile 2x2 gauze and pump 8 times to facilitate distribution of medication in the ventricular CSF.	
2. Cover site with a spot Band-Aid.	
3. Distribute collected CSF into specimen tubes. Label and send specimens as ordered	

4. Document in approved medical record: a. Neuro/Sensory Assessment Category b. Neurologic assessment c. Procedural note including site assessment, untoward reactions/events, interventions provided, specimens sent for diagnostic testing. d. Medication Administration including rate of administration e. Teaching/Learning achieved	

D. **References:**

1. Cornwell, C. (1990). The Ommaya reservoir: implications for pediatric oncology nurses. Pediatric Nursing, 16(3), 249-251).
2. Fischer, DA (2000). Neurological assessment. Advance for Nurses, 2(3): 11-12.
3. Glantzl, MJ, Hall, WA, Cole, BF, Chozick, BS, Shannon, CM, Walhberg, L, et. al. (1995). Diagnosis, management, and survival of patients with leptomeningeal cancer based on cerebrospinal fluid-flow status. Cancer, 75(12): 2919 – 2931.
4. Kosier, MB and Minkler, P (1999). Nursing management of patients with an implanted ommaya® reservoir. Clinical Journal of Oncology Nursing, 3(2): 63 – 67.
5. LePage, E (1993). Using a ventricular reservoir to instill amphotericin b. Journal of Neuroscience Nursing, 25(4): 212 – 217.
6. Meggs, WJ and Hoffman RS (1998). Fatality resulting from intraventricular vincristine administration. Clinical Toxicology 36(3): 243 – 246.
7. Moser, AM, et. al. (1999). Intraaventricular concentration times time (C X T) methotrexate and cytarabine for patients with recurrent meningeal leukemia and lymphoma. Cancer, 85(2): 511-516.
8. Obbens, M. M. T., Leavenes, M. E., Beal, J. W. & Lee, Y. Y. (1985). Ommaya reservoirs in 387 cancer patients: a 15-year experience. Neurology, 35 (9), 1274 -1278.
9. Ommaya, A. K. (1984). Implantable devices for chronic access and drug delivery to the central nervous system. Cancer Drug Delivery, 1(2), 169-179.
10. Rahr, V. (1986). Giving intrathecal drugs. American Journal of Nursing, 829-831.
11. Rudy, E. (1984). Advanced neurological and neurosurgical nursing. St. Louis: The C.V. Mosby Company.
12. Ruggiero, A, Conter, V, Milani, M, Biagi, E, Lazzareschi, I, Sparano, P, and Riccardi, R (2001). Intrathecal chemotherapy with antineoplastic agents in children. Paediatric Drugs, 3(4): 237 – 246.
13. Schnell, S and Maher de Leon, ME. (1998). Anatomy of the Central Nervous System. Seminars in Oncology Nursing, 14(1): 2-7.
14. Sundaresan, N. & Suite, N. D. (1989). Optimal use of the ommaya reservoir in clinical oncology. Oncology, 3(12), 15-22.
15. U.S. Department of Health and Human Services (2001). A guide to your Ommaya reservoir. National Institutes of Health.
16. Woolery-Antill, M. (1998). Parenteral Therapy: Access and Delivery. In Gross, J., & Johnson, B. L. (eds.), Handbook of Oncology Nursing (2rd ed.), pp. 178-182. Boston: Jones and Bartlett Publishers.